

SEQUENCE LISTING

<110> GUEGLER, Karl et al

<120> ISOLATED HUMAN TRANSPORTER PROTEINS,
 NUCLEIC ACID MOLECULES ENCODING HUMAN TRANSPORTER PROTEINS,
 AND USES THEREOF

<130> CL000861

<140> 09/749,589 <141> 2000-12-28

<160> 4

<170> FastSEQ for Windows Version 4.0

<210> 1 <211> 2262 <212> DNA

<213> Homo sapiens

<400>. 1.

atgagecage ecaggeceeg etaegtggta gacagageeg catacteect taccetette 60 gacgatgagt ttgagaagaa ggaccggaca tacccagtgg gagagaaact tcgcaatgcc 120 ttcagatgtt cctcagccaa gatcaaagct gtggtgtttg ggctgctgcc tgtgctctcc 180 tggctcccca agtacaagat taaagactac atcattcctg acctgctcgg tggactcagc 240 qqqqqatcca tccaqqtccc acaaqqcatq qcatttqctc tgctggccaa ccttcctgca 300 qtcaatqqcc tctactcctc cttcttcccc ctcctqacct acttcttcct gqqqqqtgtt 360 caccagatgg tgccaggtac ctttgccgtt atcagcatcc tggtgggtaa catctgtctg 420 cagctggccc cagagtcgaa attccaggtc ttcaacaatg ccaccaatga gagctatgtg 480 gacacagcag ccatggaggc tgagaggctg cacgtgtcag ctacgctagc ctgcctcacc 540 gccatcatcc agatgggtct gggcttcatg cagtttggct ttgtggccat ctacctctcc 600 gagteettea teeggggett catgaeggee geeggeetge agateetgat tteggtgete 660 aagtacatet teggaetgae cateceetee tacacaggee cagggteeat egtetttace 720 ttcattqaca tttqcaaaaa cctcccccac accaacatcq cctcqctcat cttcqctctc 780 atcagcggtg ccttcctggt gctggtgaag gagctcaatg ctcgctacat gcacaagatt 840 cgcttcccca tccctacaga gatgattgtg gtggtggtgg caacagctat ctccgggggc 900 tgtaagatgc ccaaaaagta tcacatgcag atcgtgggag aaatccaacg cgggttcccc 960 accorggtgt cgcctgtggt ctcacagtgg aaggacatga taggcacagc cttctcccta 1020 gccatcgtga gctacgtcat caacctggct atgggccgga ccctggccaa caagcacggc 1080 tacgacgtgg attcgaacca ggagatgatc gctctcggct gcagcaactt ctttggctcc 1140 ttotttaaaa ttoatgtoat ttgotgtgog otttotgtoa ototggotgt ggatggagot 1200 ggaggaaaat cccaggtggc cagcctgtgt gtgtctctgg tggtgatgat caccatgctg 1260 gtcctgggga tctatctgta tcctctccct aagtctgtgc taggagccct gatcgctgtc 1320 aatctcaaga actccctcaa gcaactcacc gacccctact acctgtggag gaagagcaag 1380 ctgqactqtt qcatctqqqt aqtgaqcttc ctctcctcct tcttcctcag cctgccctat 1440 ggtgtggcag tgggtgtcgc cttctccgtc ctggtcgtgg tcttccagac tcagtttcga 1500 aatggctatg cactggccca ggtcatggac actgacattt atgtgaatcc caagacctat 1560. aataqqqccc aqqatatcca qqqqattaaa atcatcacqt actqctcccc tctctacttt 1620 gccaactcag agatettcag gcaaaaggte ategecaaga etgteteeet gcaggagetg 1680 cagcaggact ttgagaatgc gcccccacc gaccccaaca acaaccagac cccggctaac 1740 ggcaccageg tgtcctatat caccttcage cetgacaget ceteacetge ceagagtgag 1800 ccaccagect ccgctgagge ccccggcgag cccagtgaca tgctggccag cgtcccaccc 1860 ttegteacet tecacaceet cateetggae atgagtggag teagettegt ggaettgatg 1920 ggcatcaagg ccctggccaa gctgagctcc acctatggga agatcggcgt gaaggtcttc 1980

ttggtgaaca tccatgccca ggtgtacaat gacattagcc atggaggcgt ctttgaggat 2040 qqqaqtctaq aatqcaaqca cqtctttccc agcatacatg acgcagtcct ctttgcccag 2100 gcaaatgcta gagacgtgac cccaggacac aacttccaag gggctccagg ggatgctgag 2160 ctctccttgt acgactcaga ggaggacatt cgcagctact gggacttaga gcaggagatg 2220 ttcgggagca tgtttcacgc agagaccctg accgccctgt ga <210> 2. <211> 753 <212> PRT <213> Homo sapiens <400> 2 Met Ser Gln Pro Arg Pro Arg Tyr Val Val Asp Arg Ala Ala Tyr Ser. 5 Leu Thr Leu Phe Asp Asp Glu Phe Glu Lys Lys Asp Arg Thr Tyr Pro 20. . , . Val Gly Glu Lys Leu Arg Asn Ala Phe Arg Cys Ser Ser Ala Lys Ile 45 Lys Ala Val Val Phe Gly Leu Leu Pro Val Leu Ser Trp Leu Pro Lys 55. . 60. Tyr Lys Ile Lys Asp Tyr Ile Ile Pro Asp Leu Leu Gly Gly Leu Ser 70 . 75 Gly Gly Ser Ile Gln Val Pro Gln Gly Met Ala Phe Ala Leu Leu Ala 90 . 85 Asn Leu Pro Ala Val Asn Gly Leu Tyr Ser Ser Phe Phe Pro Leu Leu 100 105 Thr Tyr Phe Phe Leu Gly Gly Val His Gln Met Val Pro Gly Thr Phe 120 125 Ala Val Ile Ser Ile Leu Val Gly Asn Ile Cys Leu Gln Leu Ala Pro 135 Glu Ser Lys Phe Gln Val Phe Asn Asn Ala Thr Asn Glu Ser Tyr Val 155 Asp Thr Ala Ala Met Glu Ala Glu Arg Leu His Val Ser Ala Thr Leu 170. 165 Ala Cys Leu Thr Ala Ile Ile Gln Met Gly Leu Gly Phe Met Gln Phe 185 Gly Phe Val Ala Ile Tyr Leu Ser Glu Ser Phe Ile Arg Gly Phe Met 200 Thr Ala Ala Gly Leu Gln Ile Leu Ile Ser Val Leu Lys Tyr Ile Phe 215 Gly Leu Thr Ile Pro Ser Tyr Thr Gly Pro Gly Ser Ile Val Phe Thr 235 230 Phe Ile Asp Ile Cys Lys Asn Leu Pro His Thr Asn Ile Ala Ser Leu 245 250 Ile Phe Ala Leu Ile Ser Gly Ala Phe Leu Val Leu Val Lys Glu Leu 270 260 265... Asn Ala Arg Tyr Met His Lys Ile Arg Phe Pro Ile Pro Thr Glu Met 280 Ile Val Val Val Ala Thr Ala Ile Ser Gly Gly Cys Lys Met Pro 295 300 Lys Lys Tyr His Met Gln Ile Val Gly Glu Ile Gln Arg Gly Phe Pro 310 315 Thr Pro Val Ser Pro Val Val Ser Gln Trp Lys Asp Met Ile Gly Thr 330. 325. Ala Phe Ser Leu Ala Ile Val Ser Tyr Val Ile Asn Leu Ala Met Gly . . . 340 345

63

Arg Thr Leu Ala Asn Lys His Gly Tyr Asp Val Asp Ser Asn Gln Glu

	355					360					365.			
Met Il			Gly							Ser	Phe	Phe	Lys	Ile
37			_		375					380.				
His Va	l Ile	Cys	Cys	Ala	Leu	Ser	Val.	Thr	Leu	Ala	Val	Asp	Gly	
385				390					395			_	_	400
Gly Gl	y Lys	Ser		Val	Ala	Ser	Leu		Val	Ser	Leu	Val		
		_	405	_	~7		_	410	_	_	_		415	
Ile Th	r Met										ьeu	430	ьуs	ser
Val Le						i i			Tyre		Cor		Laze	Gln
var be		AIA							цуъ		445	ьeu		GIII
Leu Th														Cvs
45		110	-1-	-7-								<u>-</u> -	47.5	
Ile Tr		Val	Ser	Phe								Leu	Pro	Tyr
465														
Gly Va														
			485					490					495	
Thr Gl	n Phe	Arg	Asn	Gly	Tyr	Ala	Leu	Ala	Gln	Val	Met	Asp	Thr	Asp
Ile Ty			Pro	_		_							Gln	Gly
	515		1			520.					525.			~ 1
Ile Ly		lle	Thr	_	_						Ата	Asn	ser	GIU
53 Ile Ph	_	Cln	Tara		535				Wal.		Lou	Gln	Glu	T.OU
545	e Arg		пуъ		116		пуъ		555	Ser	пец	ĠIII	Giu	560 .
Gln Gl	n Asp				Ala					Pro	Asn	Asn	Asn	
			565										575.	
Thr. Pr	o Ala	Asn	Gly	Thr	Ser	Val	Ser	Tyr	Ile	Thr	Phe	Ser	Pro	Asp
		580	_				585	_				590		
Ser Se	r Ser	Pro	Ala	${\tt Gln}$	Ser	Glu	Pro	Pro	Ala	Ser	Ala	Glu	Ala	Pro
	595					600								
Gly Gl		Ser	Asp			Ala	Ser	Val	Pro		Phe	Val	Thr	Phe
61			1		615				_	620		_	_	
His Th										Phe	Val	Asp	Leu	
					T	T 011	Com	Com	635.	П	<i>α</i> 1	T	Tla	640
Gly Il	е пув	Ата	645			цец			TILL	TAT	GIA	пув	655	GIY
Val Ly	e Val	Dhe							Gln	Val	Tvr	Asn		Tle
var by	b var	660	LCu	Vai	11011	110		7114		·uı	-1-	670		
Ser Hi	s Glv		Val	Phe	Glu	Asp				Glu	Cys		His	Val
	675					680					685.	•		
Phe Pr	o Ser	Ile	His	Asp	Ala	Val	Leu	Phe	Ala	Gln	Ala	Asn	Ala	Arg
. 69	0.				695					700				
Asp Va	l Thr	Pro	Gly	His	Asn	Phe	Gln	Gly		Pro	Gly	Asp	Ala	
705				710					715.					720
Leu Se	r. Leu	Tyr	_	Ser	Glu	Glu	Asp		Arg	Ser	Tyr	Trp		Leu
a1. ~1	~		725	a ?	•		D)	730	27	a 2	ml- ·	 •	735	7 1-
Glu Gl	n Glu		Pne	GIY	ser	Met		Hls	Ala	GIU	Tnr		Inr	АТА
Len		740					745					750		
Leu														

<210> 3. <211> 24526. <212> DNA

<213> Homo sapiens

```
<221> misc_feature
<222> (1)...(24526)
<223> n = A, T, C \text{ or } G
<400> 3
ctgggttcct atgtggggag gtcatgctcc ccactcattg agcccccca ggcaaaccac 60
ctggacagcc agacccatgc agactctgga gcaggtggag aggaagagtg agaccacccc 120
gcctcacggg cggtgaaggg ccggcagcct ctgaatagtc tctgctagga ggtagaaagc 180
acceteceat ettaateata gtaateateg ecaetaceat ttaetgggtg cetataaaag 240
gecageetet teatacaeat gateteaetg aateeteata geatetgeet gegaetgtta 300
ttatccccat ttacagatga agaaactgaa tctttgaacc caggtcatct ggctctcaaa 360
cttgtgctgt tttccctaag ccacccggtc tctcatttct cccactgaaa tgtctcacat 420
gccattgccc ttactcattt ctgcccatgt ctcctccaaa acaccattta tcaattcgct 480
caacaagtat gtgttgagta cacactaagg gccaggcgag gggctgggca caggcgctgg 540
gggtaggttc attctcccac cttcgcttct gctgggtatc acctgtgggg tcttgccggg 600
cateceacee teacetgtag tteaagtgga cettgggate ecaagaceaa atgaatggaa 660
tgcaccagcc cagccttcac caacttgagc acaatcttat tcataataga aactcacatt 720
tgcatcacac tttacatttt acacaacccc ttcttatcca ttaactcatt tgatcttcac 780
aacaaccetg tgagatatgt ctgttactcc cactttagtg atacagaatc tgaggtttga 840
aaagtaatgc tgaccattct gcctcattaa taaaagcagg attaacccag gctcctggac 900
cettecacaa aaggeattaa geaacetget eeeetetgae aaceteeeet gteaeeeagg 960.
ctctcctctg ggaagttggg ggcatctcta gcccccaagt agttactcat tttcaacccc 1020
atctcaaatc ttttgccaaa ctggccacag ccaccccaca ctccccacct cccagataca 1080
aatcctcact ctaagccttc cccatctctt tcttctctgt ccttctttct ctgtggtcct 1140
ctgagcaact tctcccagct ctgggaggta gaggggaggt gggagaccca gtaattggaa 1200
gagggagggg gaaaggttcc tacagggaac tcctccgggc ctcaggggcc ctggcactca 1260
gctctgccca tctcagctcc tggaacgtca gccaggttgc gcaaaaagtg aggaggagag 1320
gageggeagt acacaagggt gggggaaaga ttaggcacag gaageegtgg gagagagage 1380
cggcaggtgg accatcctgg tttccccaca cacaccattg tccccctggg aaacctgttg 1440
gtgaagttct agatgtctta tccaagaagg gtcctcttga ggtcatctca gctatccccc 1500
tgcctctagg caagetgttt tetgtttett ecaagetgae tggetgaatg gtaggageet 1560
ttctgccagg gaaactaagg tctgggaagg gagtatggct tgtggggaca ccaggggtca 1620
ggggagggga gggtccacct gctgaatcaa gtggggcctc ctgccctcgt gattcccctt 1680
tgcctggtgc tcagtggggg tgatggtgac gccacaggtg tggagtgcca gccacgtgct 1740
gagegecaag caaaacagee agggtgagte tatgeateat cagtgeetgg gaaggaagge 1800
cactgcgagc agggagtctg acggaaaaac ttgacagagg gaagggaggc accttgcttt 1860
atcggggcgg ggaaggccag aataaaactc tgctactgca aggaccagag agagaaggcc 1920
tgggctggca ctagggaggg atgttccctc accetcccct cctctgcttc tcccaaagct 1980
tgtaaatgcc ccagatatga gccagcccag gccccgctac gtggtagaca gagccgcata 2040
ctcccttacc ctcttcgacg atgagtttga gaagaaggac cggacatacc cagtgggaga 2100
gaaacttcgc aatgeettea ggtaactggt ceagageeea gaettetgee teetetgete 2160
cctaccaaaa tcctttctgc accaggacac ggcttctgca ctggtatccc taagatgggg 2220
ttaagggaag ccctggggaa gtgaggttct gaatgatgaa tttaagatcc tacaacctca 2280
tctgtactga gacccccagg gaggatgggg agcaggagca agaaccatcc agaagggtta 2340
tatggcattc ccaaacccct gcatggcatc tcccatattc tcaattcacc cgggtctctc 2400
tgggtttgtt aaggcatggt agatgagcat ctacgttatg gaggggtggg gagcatcaga 2460
gcccttactc catgccctgt tccctcctta caaaaaatac ctgaagttac catcacccca 2520
ggttctttgt cctttccctc ccggatgttc cttcctccac ttggtccaga gaatgccaaa 2580
aggaggccct aaatttctga actttcctga ggggacctac cagggtgtag tcctaccagc 2640
gcccagggtc tttccactct catctccctg gaaatgcgat ggtgggtatg aaaccttgtc 2700
cctaagtagg cgctacacaa ggtgatccat acccacaccc caggaggctg gggctgcggg 2760
tgtcaccete cecatteeca gaeteetgge agaeeteete tggeeeaget ataggeeaae 2820
tcactctccc tcactccctt ggggaaacgg ctgattcagt tacctggatt gaggtcactg 2880
gcaatggctg aagtggagac gcaggtggaa ctggttcagg ccgggggaat cacccacttg 2940
agtttgtact aaaagcccca gcccagccct gtttctcttg ggaggctcca tttctgccca 3000
```

<220>

S

gttacagtct gtcctcacag ctgtgctcct cagacaggtg gtctctgcca gtctttgtgc 3060 ccaagacttt agggcacaaa gtctgaggat gagaagatct gctattgtcc taaaagatta 3120 ggataatgaa agctgtaaag ggatatagca aactaacaat tcctatgata ctggcatgag 3180 agccttgaac agtgcctggc atagagaagg tgcaccaata aatatttgtt tcatgaatga 3240 atgaatgaat gaatgtctag aaagctaatc cctctcagcc tctgtttcca gttcttcttt 3300 caagetteag attgetttge ceaacataca geagaettge aagtaaggtt gggeatggae 3360 taqccctcaa atgagttgtt tttctttccc tagccagctc tctattcata agtccggctt 3420 tetetgecae aaacagaeet gatggageee etgeaggget ggttetetet teaageaagg 3480 ctttagagtt gcattaagca atttatcccc cgtccacctc cccttccagc atcccaggga 3540 tggcagaggc acccatgagc cccagaaggg acagggggta agatattgat gatgatgctt 3600 tttcttggag tgttagttgg aagagaaaat ctgcccagac tttccaaggt acaaagcatt 3660 gtctttgttg gtttcagtct tgggtgacat ccaggggacc gagtgtcagg gaaactattg 3720 ttgagcaaga gcaaagagca ggaattggtg ctgggcagga aaggaagcct catcagagca 3780 ggccagtgag tcaccaaatg ggccctaagt atttgagttc cctcaactgg gagaaggaaa 3840 gcaaatgccc ctcacccact tccagtcatc aatccaccgg ctgtcaccct tgagtttgta 3900 agcccttgtt cctaccgctc ctgagtttct atgaaaggac cttgaggtgt tcaacaaaca 3960 gggaagggat caacteteee caccetgegt tgaccaatga attetteeet cetetgetge 4020 ccagtgaatt aacaggagaa agaactccgg tattggagtt accacacata aaggatagtg 4080 agtcagcaga gtgcaccctg caggaacaat agagccttcc ttttcaagga agttctaaga 4140 aaaatggcag caggcaggcc ccactcgggt gtattcactc attcatttat tcaacaaata 4200 tttactaagt gcccctgtgc aaggetcgag gtgtacaaag atgaacagga gagctagact 4260 tettgecatg egtggtgggg tttgetgeet agtgggagag acagacaaaa agcaaggaat 4320 gcacacacag gatgcacaca cagcggcagg aaccaaggtg cagttaccca ggcctgggat 4380 cagacagaca ggactcagag gagactttcc cagagaaaag ccatctgagc caagggatgg 4440 atctgatacc tccgaaggct gagccaccat aacactcata cctttaagcc aagtcttata 4500 aactccccag gtaagcaget ggcagtcaga agacctccag ctaatgccca ggacaagttg 4560 atgagetete aagaaaaagt teetgeettt tetteteaat ateeetggea caeagtteag 4620 tgaattttga atgaaccaat gaatgaaatg agcaggatat gataatccct ctccaacacg 4680 gaatgtccaa gccatgcaga gccgactgga aattttcccc gttcccttcc agatgttcct 4740 cagecaagat caaagetgtg gtgtttgggc tgctgcctgt gctctcctgg ctccccaagt 4800 acaagattaa agactacatc attcctgacc tgctcggtgg actcagcggg ggatccatcc 4860 aggtcccaca aggtgaaggg gctccttcag ccaggcctgg attgccactc ccctcaccat 4920 tecteteete atececaete catecetetg tgatececat aagetagtea tgetgetgag 4980. cttcagtctc gttgtcctct gcaggcatgg catttgctct gctggccaac cttcctgcag 5040 tcaatggcct ctactcctcc ttcttccccc tcctgaccta cttcttcctg gggggtgttc 5100 accagatggt gccaggtaag gcctctcccc tctgggcagg caggatgacc cagaccacaa 5160 ggatgggagg tgtggcaaag gggcctcggg agattttcca tctgcattct cctggagttg 5220 ttcctggtca gtcctagggg aatggtcact gtgaatgtca tttccaggtc ctcggtgacc 5280 ttggagaaac cactgagcct ctttgagttc agttagcatt acctgttcca tcttcctcct 5340 aggaatgaga ggaagactta gcagaacaag atataccata tgctataaca tgcttaaaca 5400 gatgtgagaa atcaccatct aactccctgg ttggtcccag ccggccacta cagggacatt 5460 tggacttete tggtgetaag tgagatggag gaaageetgg teacaaggge tggtttetgg 5520 ttcaggctct gcttatattt cttatttctg agttcatttt ctcacgtgtc ctgtatgaca 5580 atattgacca ttggggtaaa agcaccttga aaagcataga tcatggttag agtgagtggt 5640 tgttattatt gtgttggaga agagccttgg aggtgcaggg atccatcccc ctggggtcgg 5700 gaagcattcc tgggcccctt tctggtttcc atcggtgtgg ttcaaacctc tgatttttgc 5760 tggctgggtg gggcaccaca ggtacctttg ccgttatcag catcctggtg ggtaacatct 5820 gtctgcagct ggccccagag tcgaaattcc aggtcttcaa caatgccacc aatgagagct 5880 atgtggacac agcagccatg gaggctgaga ggctgcacgt gtcagctacg ctagcctgcc 5940 tcactgccat catccaggtg agggggcagc ccccaaccct gctagaaggg catcagacca 6000 ccctgccct ccctcaaagc cttagctttg atgctaaatc tgatttaggg ggctgggtgt 6060 ggaggeteat geetgtaate eeageaettt gggaggetga ggagggtgga teaettgagg 6120 tcaggagttt gagaccacct tgaccaacgt gatgaaaccc catctctacc aaaaatacaa 6180 aaataatcca ggcttggtag tatgcgcctg tagtcccacc tactcaggag gctgaggcag 6240 gagaatcact tgaatccggg aggcagaggt tgcagtgagc tgagatcgcg ccactgcact 6300 ccagcctggg tgacagagcg agactccgtc tcaaaaaaaa aaaaaaaaa aaaaaaaaa 6360 cccaagttag ggctcacctc ctcctcctc cccatcccag ggctaaagtg aaccttgaaa 6420





attaacagta tctcctcatc tgcatgtagc aggaccatac aaaaaaacaa cagctgtacc 6480 tggttaaact gtcctgagct ttaaacctgt aaaagactca cagcctctct ccattatccc 6540 gtggagaaac ccaactctct gccagcatag tcttgcagac tgctaatttt ctctaacatc 6600 cctcactccg ctccagcctc ctctgctcca agccacagca gcagttgcac aacataaatt 6660 gagettetge aaatggttge aaaggattet getaggtttt atgaagggaa geacaacatg 6720 acagaatgca agagcaaaac acagtcccag agagcgcctt ttcattcact cattcattcg 6780 qttttqtqcc aaqaactaqq ctaaaccctq qqatacaaaq ataagtaaga aagaggtcca 6840 attcacaagt tgctcacagc ccagcagagg aaggagccat gtcaacagat aaatttgtat 6900 tcacggagga ceteaaagag gaggtgacae tecacetete ttaaaggatg agaaettaac 7020 caggaacaag gtatacagag gatggtccag gcagaaggga acagtgccta aaaacactga 7080 ggcctgagag agtgtgatct gcgcaggcaa agtaaggggc ttggtgtggc tggagggtag 7140 agggcccaga agaggatgga aaagtaggca ggagccagac aatgagatct ggggtctgtt 7200 ctctgacagc gactttgggt ctgattggca gtttataagg atcgtttggg ctacacaatg 7260 atgagtggga ggtggattag aatcaaggca ggggacctgt tgggagactc tgcagaggcc 7320 caggcaggaa taatgcaggc gaagaccagg tagagaaaga gatggggctg gacttgaaaa 7380 gaatgtttta ccaggagctt ggtgatagac tggatgtggg aggtaaggga ggatgactct 7440 caagtttttg gttgggcaac caggttaatg atggtgtcat ttactgagag agaaaacact 7500 gggggaggac tagacttatt ttacagataa gccaaagcca gagaggtgat gtgacagaaa 7560 ggcccatgct ctaaaggagc tgaaggtctg atggcagcca tgtagagcac agtgaagggc 7620 aggtgaaggt cacagatggt ccaattccct caagctactg ctacgctagg actgcacgga 7680 gctccagacc tgcgtgtgtg tggggcgggt cgttggaact gctgaaccac attggtcttc 7740 cgccaccaac caccetttte etecteteag atgggtetgg getteatgea gtttggettt 7800 gtggccatct acctctccga gtccttcatc cggggcttca tgacggccgc cggcctgcag 7860 atcctgattt cggtgctcaa gtacatcttc ggactgacca tcccctccta cacaggccca 7920 gggtccatcg tctttgtgag tctggggatg cacccctgcc attggagcaa ggctccagca 7980 gacacatgag gaggatgtac tgttttaaga tgtcgtgagc tcctcattgc aagggctggc 8040 ttagctgttg ttcagagagg attctgaggg ggtttctgtc ttgggagggt caaagtcatg 8100 actcacagag gttcttggta gttaatacct gcagaaaaga gctgtacatt ctccgccagt 8160 tececattet agtgeeteaa eccetecetg eetggaaagt eetgeettat gtetaatete 8220 catccctcct ccttcagccc aaactcttct aaagaaaaag aaagcattcc ttttctagca 8280 caagttcccc atgtgccttt tgggaaaggg cggtgggcga cgggacaggg ttcctgatca 8340 gggttttaat tetgtettgg tgtgeeteea ttagetttga tggeateeet teeetgggte 8400 agacacccaa aggtggggta ttatgggaag aaggggtggg agcctgtgag catgatgctc 8460 tttcccccag accttcattg acatttgcaa aaacctcccc cacaccaaca tcgcctcgct 8520 catcttcgct ctcatcagcg gtgccttcct ggtgctggtg aaggagctca atgctcgcta 8580 catgcacaag attegettee ceatecetae agagatgatt gtggtaagga cettgtteag 8640 agctgggatg ttggggggcc aggctgtgag acgaggaagc ccctaccttt cctcacccca 8700 tcccctcaac tggcagccag tgggacagga agtcagttgt gaatccatcc catcccccgt 8760 atgtggcgtt tcctctcttt ctactgctct aataattccc cctaaggagg caggggagtg 8820 ggattcaggg tccccagaga aaagggagac ttgagagaga cgcctgccct ggccccacct 8880 tagggccaat ccccattctc cactctgggg tttgcaggtg gtggtggcaa cagctatctc 8940 cgggggctgt aagatgccca aaaagtatca catgcagatc gtgggagaaa tccaacgcgg 9000 gtgagtccag gtggcccaga agcctggccc acccgcacct catgccccac taaggcctga 9060 gctcggagag ggagacaaga tgaactctat gaaagtgcag tcgaaactgt atgacactga 9120 ccatgtatga attattacta ttaccgtttc ctgagaaggg ccgcacaacc agccaatgta 9180 ggctatttta tgagaaatga gtcttaactg ccacactccc cttataaatc tcattcaact 9240 gatgctgtta aacaaagcct ctctgaacag ccgcttgctg gctctttgcc ttgctctaat 9300 gcattggttc tttgtccatg tagaaaggga actattaggt tcaaccagat tcatgaagca 9360 tccactctgt gccaggcacc atgctgggcc ctgggaggag aggggtgacg cttgtcctgc 9420 agggttggaa caggcaaggg agggaagacc acatagcacc aaaggtctag gggtctgtgg 9480 actogtgago atacagggtt cagaatotgg gagttaacaa acgaggooot accacatact 9540. ggcccgggga ccttgggcaa gttaggttct ctcagcctca gtttcctcct ttgtaaaaca 9600 ggagtgatgg tecetaceet atggggtggt getgaggatt eagaetggat gggataaett 9660 aggcaaagat cccggcacac catgggggcc tggctggtcc ctgtgggctg gtgaaggact 9720 tggctgccct ccccactcac accettgggt tetgcctcct tcctggctcc tcggcaggtt 9780 ccccaccccg gtgtcgcctg tggtctcaca gtggaaggac atgataggca cagccttctc 9840

y

cctagccatc gtgagctacg tcatcaacct ggctatgggc cggaccctgg ccaacaagca 9900 cggctacgac gtggattcga accaggtagc tctggccacc cccggcagga ctgggcagga 9960 caggtcaact caggcctggc atgacatatc ttgggtgggg agatcattgg gctgaggtga 10020 ggcaggctgc ctcgagtgtg ggggataggg ggtcctctga ccctaagagg ctgacctcct 10080 cttgactggg aatgtgtgac tttatagcca ctgggtcact ctcaggtctt aggcccacag 10140 tccagettge atgectgact geacttggte eccgtgeece ceageceeae actggettet 10200 aatcctgtcc cctccctgca ggagatgatc gctctcggct gcagcaactt ctttggctcc 10260 ttctttaaaa ttcatgtcat ttgctgtgcg ctttctgtca ctctggctgt ggatggagct 10320 ggaggaaaat cccaggtgag ccttgttcta ggggagttgg ggggaggtgg taagagaaca 10380 gttgccccaa aaaagcctgg gcactgcaag ccaggccagc tcttctccga ccccttcttc 10440 ccgtacttag tctccactcc accaaagcca tggattggaa ataaatcaag agcaaaaatt 10500 tcacaccttc cctctatccc caactctttc tcggaatagg tggccagcct gtgtgtgtct 10560 ctggtggtga tgatcaccat gctggtcctg gggatctatc tgtatcctct ccctaaggta 10620 agagcccagc catcgagcag aagtcaacga aagactccaa taagaacaat ccctgagagt 10680 tgtgtggcac tttacggacc acaaagtgcc actgttgtca tacttagtct caaccacaaa 10740 ctgtgaggta gacaatgcag gttttatcct ccccatttta caggtgaagg aaactgagtc 10800 tgagagteta agtaacettg tecatagtga ggeagettae agegeaggge tggteecaaa 10860 ctccagcett ctggcctcag agtctaatcc ctaggcaaca tttgcaccta cccacgagta 10920 ccaggetett atatagecca getaggaggg etetaggeat gegteattta gagatgaggg 10980 aagagagata gggaaaggat ggggccagga aggaccccat ggctctaacg ccagcacttt 11040 ccaaacctaa ggtcgaatgc agagatttgg gggatcagcc aggggaggtg ttccagaact 11100 ccgtctctgt cctgccaggc cttggggtcg ggtatgcgca ggagggcaaa aagaagggga 11160 gaccetgggg teetggagea atgttetget tetetagtet gtgetaggag ceetgatege 11220 tgtcaatctc aagaactccc tcaagcaact caccgacccc tactacctgt ggaggaagag 11280 caagetggae tgtgtaagta tegggeagee tetgggtaet ggeeatgeee etgeeetete 11340 ctccaaccc acagccctgt cagccctgtc ctaacaatga accctctagt ctgctgcttc 11400 ctaattagca tgagatgagt ggttaaaagt ccgagtttcg aagtgaaaca tcctatgttc 11460 aaaccctaac tcagccatct gctggctcca tggccaatag caagcccctt aacctttccc 11520 agtettggtg tettaactgg geaaatggtt attttatget etetgeetee cagggtttte 11580 tatgaagaag aagcaaggta atacaagtaa acatgttgtc tacatcgtat tttatactca 11640 ataaagetta getatgacta etttatgaca tacagettta aaaaacaaaa ggaaatagtt 11700 tgtattttaa aaaaaaacct agaacataaa gccagaggac caaaatcttg agcaagttac 11760 tagacttccc tggggttcta tttcctcatc tgtaaatggg ggtgagactc atgcagtcat 11820 ggttgcgtca aacgctggtt ccgaggatta aatgagatcc cagtgggaaa acaccgcatg 11880 agegeaaaca ttetgeaaac atgaettatt gteetgatta gteacacact ceacegeate 11940 atcogctggg catagtaatg aaggccagtg tgttttgacg acactgcctt ctctccattt 12000 aagccccacc ataacctatg ggagaggatt tactaaactt tettaacggt gatgaaacca 12060 aggeteagaa tggttaagta aattgteaaa ggeeacagag gtagggagtg gtagagtetg 12120 gattaaaact ccaagtcctg gactccagac ctctaggctg tactgtctca tagggaaggc 12180 agteteacce acetagggea gagaagaaaa teettaaage cagagaagtg agtggeteat 12240 ctgtggtcac ccagagagac agtgatgagg acagggagaa aaattatacc tcagttccca 12300 gcccaaggat ctgctttgac cataacccaa caagcccccg ctatggtggt atttccttag 12360 gttcatatgg cggcttttgt ttccatttga tcttcacagc aattctctac aggaatctgg 12420 gcagatttat ttcctttaga ggaatttcca ggtcttaaaa tctatagggg gcaactatca 12480 aaacttcacc caatgttgcc ccctacccac acacaaaacc aggcccccag ccgatcagaa 12540 agcactgctg agctcctgtc agggcccacg cagctcgctg tgagacagag agagggaact 12600 cacatttatt gatcacctac tgagcatcca tcactaggct aggaccgtca cattccttaa 12660 cttttgaatc ctttcatgag gtaggcatta ttattctcct tttgtttcac atagccatta 12720 aagaacaaaa tttggggctg ggtgtgctga ctcacacctg tgatctagca ctttaggggg 12780 ctgaggcagg aggatcgctt gaagtcagga tttcaaggtc agcttgggca gcttagcgag 12840 agcogtotot agaaaaatat aaaagttago tgggtgtggt ggcacgtgcc tatagtoota 12900 actattcagg aaggttaggc gggagcacaa cttgggttcc agggtttgag gctccagtga 12960 gctgatcttg ccactgcact acagcctgag caacagagca agaccctgtg actccaaaaa 13020 caaacaaaca aacacatttt gaacccaaac agatctgacc caagatgcat gctcttatag 13080 atgccacctc cctgtgtgct ggggcttcta ctaaaaacac agacaagatc aggcaaccac 13140 agtcaatcta agggaaagag gaaagtgtaa ccaaagcaca aatacataaa atattgcaaa 13200 aatgctattt aaagaaaaaa aagagaagag aggctctgag gttgtactaa cagagaatgg 13260.

18

ccttggctaa tccaggaaga cttcctgaaa gaggttgttt tttccccagg tctgcttttg 13320 acatetetet titeacagig catetgggta gigagetice telectecti ettecteage 13380 ctgccctatg gtgtggcagt gggtgtcgcc ttctccgtcc tggtcgtggt cttccagact 13440 cagttgtaag tgatagette egeceteeta ggeceacagt eggtteeetg ggecageeeg 13500 caaagggett ccatgccacg gcctggetta gtccactgta ccttccacct ctgggcctgg 13560 cactggaggt gctgccaggc ccaaagagag cccaacccag ccaggactgt gggcacagtc 13620 tqqqctqttt qacttcccat atcttgaaaa ccccagagaa agccagcata ctcttgctgg 13680 ggatggctgg ggagagggca gtggcagaga aaggagggca agggcaggtg gtgagattca 13740 acatecttee aaagacattg ceagaaceee aaaceaaatg ggaceeeace eeaggagage 13800 gccagggtgg aagacagaag ctgtgttcta cacactggga gtattacaga gaaggggtct 13860 tggccaaggc agggagtacg ctgaatgttg ggggaatcct atcttctctt cttgagaact 13920 cagaacaagg aaatgatgac ttcagggcga ctcccaccac ttctcccacc acttctctcc 13980 cctgccctgt ggtctgggag ctatgtcaag gacctgcctg tcatcctcat agttatagga 14040 ggccacaggc caccagacat gtgtctccag tgcaaaaaga cagacacagc aagtctgggg 14100 gtgaggacag gaccccatcc taccttggct ctgccccgc cccagcaggg gcacccttcc 14160 aggeceatgt gecattagea ttetettatg tttttetett eetgetteat eeagtegaaa 14220 tggctatgca ctggcccagg tcatggacac tgacatttat gtgaatccca agacctataa 14280 tagggtaggt aattcaagct tatgacctcc ttcttttgct ctgcaccacc ccaagaagag 14340 gttgcttttt aaagccaata aagacatttc tgcaacttga gctcagtctc cctgtcacag 14400 gcccaggata tccaggggat taaaatcatc acgtactgct cccctctcta ctttgccaac 14460 tcagagatct tcaggcaaaa ggtcatcgcc aaggtaaggc tcagtccctg gcgaccagag 14520 gctctggaca gagagtggcc ggaaaatgga agcagaaggg cggtgggagc tgagaatagg 14580 ccactcccat agagggtgga ggtcaagatt gctgttggct ctctccctgc agacaggcat 14640 ggacccccag aaagtattac tagccaagca aaaatacctc aagaagcagg agaagcggag 14700 aatgaggccc acacaacaga ggaggtctct attcatgaaa accaaggtga atgaaggcca 14760 gaagcagccc cgtgccctgc tctcctgccc attctgatac tgccccctgt tactcatggt 14820 accetggggg eccegettee caccetgaca ggeaaagaca gaaagtetet gggaacaetg 14880 cctggtggcc gctgggcatt tttcttcttt tttttctttt tctttttaga gatggaattt 14940 tgctcttgtc acccaggett gagtgcaatg gegttatett ggetcaetge aacctecaec 15000 tetggggtte aagegattet eetgeettag eeteceaagt egetgagatt acaggtgeea 15060 ccacacccag ctaatttttg tatttttagt agatattggg tttcaccatg ttggccaggc 15120 tggtgtcaaa ctcctgacct caggtgatcc acctacctta gccttccaaa gtgctgggat 15180 tacaagcctg agccactgcg cccagcctgg gcatttttct tcttggatga ggtgctacca 15240 teteccaggg aagecaetga acceecaagg eeetteteca tittetgget aagataggae 15300 atggcccatg gacttttgaa caacccagag ggggaacagc agtgaatttc ctggggaacc 15360 caggcagece agggetagea aggetggggt ggccatggca gtaateettg taateecage 15420 actttaggag gccgagatgg gagaatcact ctcatgagtt caggagttcg agaccagcct 15480 gcccaacgtg gcgaaacgct gtctctacta aaaatacaca aaaattagcc aggcgtggtg 15540 gtgggcacct gtaatcccag ctactcagga ggctgaggca cgagaatcac ttgaacccgg 15600 gaggcagagg ttgcagtgag ccgagatagt gccactgcac tccagcctag gcaacagagg 15660 gagactetgt etcaagaaat aaaggagete agtgteeeeg gaggggettt etceeagaga 15720 gagtgggctt gaggcttcag tgcctctctt ggctgggtcc tctgactttg tctgggttgt 15780 aggagaccaa gtttgcaggc cctgcctaag aaagggcttt gggagaggcc tctctggtgg 15840 agetttcagg gtctgtgttc accatcaccg aggcgagtta ttcccctaca cctacaccct 15900 ccatgcccct gcttcagtca cagcaaggtc tggctcagtc tggtggtccc tgactctgcc 15960 cactgtcccc accettccag actgtctccc tgcaggagct gcagcaggac tttgagaatg 16020 cgcccccac cgaccccaac aacaaccaga ccccggctaa cggcaccagc gtgtcctata 16080 tcaccttcag ccctgacagc tcctcacctg cccagagtga gccaccagcc tccgctgagg 16140 cccceggega gcccagtgac atgctggcca gcgtcccacc cttcgtcacc ttccacaccc 16200 tcatcctgga catgagtgga gtcagcttcg tggacttgat gggcatcaag gccctggcca 16260 aggtgaggcc ctcggggaca gcaagcacca cccactccac cccctccgct ctgctctcca 16320 cattcccttt cctgggagcc ctcatttcag gaagctgagg gaggaagctc actggggaga 16380 ctaacagete ctaggaatee eteettteee cagaegeeae caggttgaga catteteeae 16440 agagcaggcc cagacggccc atgacaatga gtggcgggac aagtctacca gagtttcagg 16500 cccctgtgct cccaacaccc ccagcagtgg ccatcccaag tccctctcag ccatcaggaa 16560 cccacccagg ttctctgagg agggtccagt ttggctcctg gttcatgatc tgctgccctt 16620 gtccctcatt caccagccac cctaggacag gagaagaaat aataccagtg ccccacacca 16680

SH

tcaggccaaa cagagagccc acgggacacc ttgaatgaat gtatccatct gataactttc 16740 cagcagccac cgccaatggc gggagtcagc aaacctcaga gctggctcag atagaggcaa 16800 gccaggggaa caatgggcac agagagtgtt cggactgcct tcaccatcaa ccaggcgcag 16860 ggcaggcccc atacccagcc ttgggcctca gccggcttcc ttagccagga tctggagtcc 16920 aggecageet tggetgaage tetagaetee etgageetee ateeteeeet geagettetg 16980 tctqaagcca caaagaagtc tgagaatcta agctactgaa agaaaagatc agccgggcgt 17040 ggtggctcac tcctgtaatc ccagcacttt gggaggccaa ggcaggtgga tcacaaggtc 17100 aggagttcaa gaccagcctg gccaacatgg tgaaaccccg cctctactaa aaatacaaaa 17160 attagecagg tgtggtgaeg ggeeeetgta gteeeageta eteggtagge tgaggeagag 17220 aattgettga acceaggagg eggaggttge agtgageeaa gategegeea etgeacteea 17280 gcctgggcaa cagagtgaaa ctccatctca aaagaaaaaa aaagaaaata tctagcccca 17340 caagaagggg ccatggtgac tttaagtgcc cgccacgttg gcaaaagtcc atttccgctc 17400 cactteccaq agaaaccgte agccaacact ccagggagaa gtggtgtgct ttgctgctat 17460 ttttgtcttt ggctgctggg ctctcagggt tgcttatttg tttggcttcc cctctgaagt 17520 acgttttgtg aatcactttt gagacccact cagaacattc ctttcctttt gcctccctac 17580 cccaacaaca cttctagctg agctccacct atgggaagat cggcgtgaag gtcttcttgg 17640 tgaacatcca tggtaagaga aagaggacat ttagggactg aaagactggc aaggagtgtg 17700 gggtaggaac aggttggtgg ggtctgaata gtgaggaggt tggaaacgag agcacccagc 17760 tatcccccac aagctgctgc ctgctcataa aagcttcagg tacaagtcca aagagactgg 17820 tcagattgca taaacatcct aggggcctta gtgacagagt gggggtgagg aggtcatgga 17880 gttacagaag gacagctagg attctaatct accccataac taatttgcca cgtatccttg 17940 gccgagtcac tttatctctc aagggatcta tttctaccta tgtaaaacga gagggttgac 18000 tagatggatt tggggatcct ctcccaatca gaaactctgt gaatcgatat aggcatagag 18060 cacacggtac cctaattccc cagggaacat ataaatatgc agttttgtag gcatacagcc 18120 tccaaagggt gcatatacac agcctcaagg acgtggccac agggcagcag acatttacat 18180 gactagcatg tacgcaaagt gcagagatgt gggagcaagt gcacacagac acacaggaga 18240 atgtgaaggg gcacatacac acacacccag ctccctgcac tgggtcagac cccctccagc 18300 agggetgeag tteceaaget eegeatggee aegttegggg agagaatetg eagtggeaat 18360 gacctgctat gatatgttct ggagttagaa gcagtggatt ctccccaacc tcactggaca 18420 cccccttagg aaaccatctc taggattaag agtaatccac acaaacttcc aatgccacac 18480 attggaagtt gctggaaagg tctgggaaaa caagaggaag gatgggtcct tgggggatag 18540 aactggcagc ggcctcttca aggatggctt aggcttttcc actcgaatca ccacaaagta 18600 ctgactccct aaatcaaact gcttccttct gctctgggtt gaaacttcag catcctcaag 18660 ttcatgttgc cctctgccgt ccagaactga tattgcactg ccaatgccat ggccctcaga 18720 tacagcaaga gctgggacct caggcctctc ccatccctgc tctggtctca ctatcttccc 18780 caccccage tecaatecae aatggetgtt atetttetga aggtgatett tteteettet 18840 agcccaggtg tacaatgaca ttagccatgg aggcgtcttt gaggatggga gtctagaatg 18900 caagcacgtc tttcccagca tacatgacgc agtcctcttt gcccaggcaa atgctagaga 18960 cgtgacccca ggacacaact tccaaggggt aaggttcttg cacctgggga atcctaggct 19020 ccaaggcact gaaatagcag gaccaagagg cattattaga aagaacacag gagaaggttt 19080 aagttccaat atcaagtctg ccatttcagt tttctgaatc tgtttcctta tctatagaat 19140 gagcaccatc aactaacatt acctacctct ctgcattttt cttttatttt gttttagggt 19200 taaatgataa ttacatcttt tgtgtcactt gaaagcactt tgtgtattgt aaaaattctt 19260 tatcaatata agttttctgg ttgcacaaac acccaaagca tagtagagca ggcccactct 19320 gctggcatcq ttccctgcct cctcctcatc tctttctaaa gggggctttc gggaagggag 19380 gggaggggag taagcctacc cattttaact taccggagct tagagatttc aggctggtga 19440 gggataaaga gattgggtct gagttttgtc tcagcttttt gacatttaat ttactagctc 19500 agtaagtcat acaaatggga tacaaataac accatctaaa actccagaag actggggagt 19560 cagaaaaatc ctacctcctt ggggtccctg cccagatccc cagtcatctc tagccctcag 19620 ggtcccctcc cagctcagct cctgcccttg gcctcccaag actcttgttg tgccccagcc 19680 ctgggtaaaa acctcccctg ccctctgtgg gtcataagaa aggcttttct ggccctagag 19740 caatgatttg ctctttgcct taagagactg atgaaggtga aaccatctgt tctaagtgct 19800 gaaagactgc ccaggaacac acagggcgct ggctcctgcc ctccatgcct agagggaaac 19860 cctggggaaa caacgggctt tcctgcttcg tgaaatttgt ccgcagagca aagagggaga 19920 ttctggagga agctgcatta gttgttagtg ccctaatcat gttcagctac tctagttggt 19980 atgtatactt gattagtcat agcacttata aataatttat attttatata atatatactt 20040 acatattata gaccattcac agatacaaat cacacacata aacacacacc ttttcaacag 20100

cattgtgagg gacaaagcag gcaaagtgag gctggttatc agactttaac agattagaaa 20160 atatattccc aggaggacag gaattcccca aggtcaggca gctagccaat agtttttcta 20220 agctgagtaa aaccttccct gcctctaacg gcccacaaag gagggaagac cgcgatacac 20280 acctgtctgg tataaggggg aagaccacag ccgtgctgtt tttgtgaggc aggtaaggga 20340 aggggcaaga ggataagtca tgtgtcagga agcagcgtcc aaccagagcc ggccacctgt 20400 cccttttcct gccaccatgc accaactttg ctgttcagtc actgaagctc attctgcact 20460 ggcttcctcc cttccaggct ccaggggatg ctgagctctc cttgtacgac tcagaggagg 20520 acattcqcaq ctactqqqac ttaqaqcaqq tqaqctgaqq gaaggggctg tgagggtggg 20580 agcagggcga agaggggaag gatggggtcg ctgtcaaata caaggcgttc actcagctgt 20640 ctcacctcca gcccagagca gtcacattca aggccacaaa gatttgtggt catctttgtt 20700 ttttttcttt tccttttctt ttttttttt ttttaatttg agacaaagtc tcactctatc 20760 acccagactg gaatgcagtg gcatgatctc agctcactgc aacctctgcc tcccgggttc 20820 cagaggttct cctgcctcag cctcccgagt agctgggact tcaggcctgc gcccagctaa 20880 tttttgtatt tttagtagag acagetttte accatgttgg ctgggctggt ctcgaacttc 20940 cgatctcaag caatctgcct gcctcggtct cctaagtgcc tggattacag gcataagcca 21000 cgatgcctgg cctttgtttt cattcttctc actccctgaa aggcatcgtg gggagagggt 21060 gagtcactgg accaagtcct agagaaccag tatctattct tattctccaa cacatcaccc 21120 acgtgaccct gagcaagcca catacaccct gggccctagt ttttatcatc tgtgaaatta 21180 ggggaaacat aggtaatacc tgtcccatcc accacacaag attggcaggg cagtcacttg 21240 ttctttcatt aattcagcag gtatttatgg cgtacctact gtttgcctga cacagttcag 21300 gatgggcaca tagcagtgag caaaacaaag gcctctgcct tttagaaact tacgttatgg 21360 nnnnnngtct acaaatgaat tattattgca tgtggacaag ccttaagaac taaaaaatat 21480 gtggctgggt gcaatggttc acacctgtaa tcccagcact ttgggaggct gaggtgggcg 21540 qaccacctqa qqtcaqqaqt ttqaqaccaq cctqgccaac atggcgaaac cccgtctcta 21600 ctaaaagcac aaaaattagc caggcgtagt ggtgcatgcc tgtagtccca gctactcgga 21660 agtctgaggc atgagaatca cttgaacctg ggaggcagat gttgcagtga gccgagatcg 21720 tgccactgca ctccagcttg ggtgacagag ctagactgtc tcaaaaaacaa acaaacaaaa 21780 caaaacctaa aagatatgtg gatatgaggg atcaccatcc ccatagggcc cctggattaa 21840 caccacccca ccaatgccct gaattaaaag aaaccagatg actaggtttg gagaaatctg 21900 getttgggte tatgagaagt agtgtetete tttgtgeete tteceattet ttttgaeatt 21960. gagetecatg gtgetetgaa teegtetete acagtgetga tggeaggtgg gacagattag 22020. aaaatagagc tggagccaca gagatttggc agactgattt cggtgccctc ttggaatctc 22080 cagcacattc caaaaagcct ggataggacc aaaatagctt atcaacgtga gaaaggactt 22140 cagagettgt ctactgecaa eceteatttt acceaatgag gaaagtgaag etattagggg 22200 gcgagggaca cgtggaaggt cacacagcac acaggaggtg attcacatgt agatttcagc 22260 acctgetect gecaegetgg actggtteae etectagget gaccetgeet eteceetgtt 22320 cacacacact ctcgcacaca cacacacaca cacacacaca cacaggtgct ttgttctggc 22380 caggggttcc tagggtcacc tettggttgc agccactgtg accccaactg gtctaacctc 22440 tetetteece teccaettee tteetgtggt teetgeagga gatgtteggg ageatgttte 22500 acgcagagac cctgaccgcc ctgtgagggc tcagccagtc ctcatgctgc ctacagagtg 22560 cctggcactt gggacttcca taaaggatga gcctggggtc acagggggtg tcgggcggag 22620 teeeteeeg cateteeaga gagageetet cageageagg ggggtgetae cettacagga 22740 gtgagagtet ggtgageeca etetteacee gteaggeeet ggeegeaatg gacaageete 22800 ctgctcactc caccccaccc acctctgccc tgtccttggc agctgaagga caccttgact 22860 tccagctttt acgagtgagc caaaaacaga aggacaagta caactgtgct ggcctgctgt 22920 acaagettea aaaagtgtee cagageeeae aeggeteggt gteagatggt gteaggetgt 22980 cacggacata gggataaact tggttaggac tctggcttgc cttccccagc tgcctcaact 23040 ctgtctctgg cagctctgca cccagggacc atgtgctctc cacacccagg agtctaggcc 23100 ttggtaacta tgcgcccccc gtccatcatc cccaaggctg cccaaaccac cactgctgtc 23160 agcaagcaca tcagactcta gcctggacag tggccaggac cgtcgagacc accagagcta 23220 cctccccggg gacagcccac taaggttctg cctcagcctc ctgaaacatc actgccctca 23280 gaggetgete cetteceetg gaggetgget agaaaceeca aagaggggga tgggtagetg 23340 gcagaatcat ctggcatcct agtaatagat accagttatt ctgcacaaaa cttttgggaa 23400 ttcctctttg cacccagaga ctcagagggg aagagggtgc tagtaccaac acagggaaaa 23460 cggatgggac ctgggcccag acagtccccc ttgaccccag ggcccatcag ggaaatgcct 23520

B,

19/

ccctttggta aatctgcctt atccttcttt acctggcaaa gagccaatca tgttaactct 23580 tccttatcag cctgtggccc agagacacaa tggggtcctt ctgtaggcaa aggtggaagt 23640 cctccaggga tccgctacat cccctaactg catgcagatg tggaaagggg ctgatccaga 23700 ttgggtcttc ctgcacagga agactcttta acacccttag gacctcaggc catcttctcc 23760 tatgaagatg aaaatagggg ttaagttttc catatgtaca aggaggtatt gagaggaacc 23820 ctactgttga cttgaaaata aataggttcc atgtgtaagt gttttgtaaa atttcagtgg 23880 aaatgcacag aaaatcttct ggcctctcat cactgctttt ctcaagcttc ttcagcttaa 23940 caaccccttc cctaacaggt tgggctggcc cagcctagga aaacatcccc atttctaact 24000 tcagccagac ctgcgttgtg tgtctgtgtg ttgagtgagc tggtcagcta acaagtcttc 24060 ttagagttaa aggaggggt gctggccaag agccaacaca ttcttggccc aggagcattg 24120 cttttctgtg aattcattat gccatctggc tgccaatgga actcaaaact tggaaggcga 24180 aggacaatgt tatctgggat tcaccgtgca cagcacccga agtgccaaat tccaggagga 24240 caagageett agecaatgae aacteactet eccetactee aceteettee aagteeaget 24300 caggcccagg aggtgggaga aggtcacaga gcctcaggaa tttccaagtc agagtcccct 24360 ttgaaccaag tatctagatc ccctgaggac ttgatgaagt gatccttaac ccccaagtaa 24420 tcattaaccc ccagaccage ctcagaactg aaggagattg ttgacccagt gacctggagt 24480 tgaggeteag ggagagatet geeacatgte tgagggttge agagee 24526 <210> 4 <211>. 714 <212> PRT <213> Homo sapiens

<400> 4. Leu Asn Gln Glu His Leu Glu Glu Leu Gly Arg Trp Gly Ser Ala Pro 10. 5 Arg Thr His Gln Trp Arg Thr Trp Leu Gln Cys Ser Arg Ala Arg Ala 25 Tyr Ala Leu Leu Eln His Leu Pro Val Leu Val Trp Leu Pro Arg Tyr Pro Val Arg Asp Trp Leu Leu Gly Asp Leu Leu Ser Gly Leu Ser Val Ala Ile Met Gln Leu Pro Gln Gly Leu Ala Tyr Ala Leu Leu Ala 70 Gly Leu Pro Pro Val Phe Gly Leu Tyr Ser Ser Phe Tyr Pro Val Phe 90 Ile Tyr Phe Leu Phe Gly Thr Ser Arg His Ile Ser Val Gly Thr Phe 105 110 Ala Val Met Ser Val Met Val Gly Ser Val Thr Glu Ser Leu Ala Pro 125 . 115 120 Gln Ala Leu Asn Asp Ser Met Ile Asn Glu Thr Ala Arg Asp Ala Ala 135 140 Arg Val Gln Val Ala Ser Thr Leu Ser Val Leu Val Gly Leu Phe Gln 155 150 Val Gly Leu Gly Leu Ile His Phe Gly Phe Val Val Thr Tyr Leu Ser 170 Glu Pro Leu Val Arg Gly Tyr Thr Thr Ala Ala Ala Val Gln Val Phe 180 185 190 Val Ser Gln Leu Lys Tyr Val Phe Gly Leu His Leu Ser Ser His Ser 200. Gly Pro Leu Ser Leu Ile Tyr Thr Val Leu Glu Val Cys Trp Lys Leu 215 220. Pro Gln Ser Lys Val Gly Thr Val Val Thr Ala Ala Val Ala Gly Val 230 235 Val Leu Val Val Lys Leu Leu Asn Asp Lys Leu Gln Gln Leu 250 Pro Met Pro Ile Pro Gly Glu Leu Leu Thr Leu Ile Gly Ala Thr Gly.

7V

Ile Ser Tyr Gly Met Gly Leu Lys His Arg Phe Glu Val Asp Val Val 280 Gly Asn Ile Pro Ala Gly Leu Val Pro Pro Val Ala Pro Asn Thr Gln 295 Leu Phe Ser Lys Leu Val Gly Ser Ala Phe Thr Ile Ala Val Val Gly 310 315 Phe Ala Ile Ala Ile Ser Leu Gly Lys Ile Phe Ala Leu Arg His Gly 325 330 Tyr Arg Val Asp Ser Asn Gln Glu Leu Val Ala Leu Gly Leu Ser Asn 340 345 Leu Ile Gly Gly Ile Phe Gln Cys Phe Pro Val Ser Cys Ser Met Ser . 360 . 365 Arg Ser Leu Val Gln Glu Ser Thr Gly Gly Asn Ser Gln Val Ala Gly . . 375 . . . 380. Ala Ile Ser Ser Leu Phe Ile Leu Leu Ile Ile Val Lys Leu Gly Glu 400. Leu Phe His Asp Leu Pro Lys Ala Val Leu Ala Ala Ile Ile Val 405. 410. Asn Leu Lys Gly Met Leu Arg Gln Leu Ser Asp Met Arg Ser Leu Trp 420 . 425 Lys Ala Asn Arg Ala Asp Leu Leu Ile Trp Leu Val Thr Phe Thr Ala 440 445 Thr Ile Leu Leu Asn Leu Asp Leu Gly Leu Val Val Ala Val Ile Phe . 455 . 460 Ser Leu Leu Leu Val Val Val Arg Thr Gln Met Pro His Tyr Ser Val 470 475 Leu Gly Gln Val Pro Asp Thr Asp Ile Tyr Arg Asp Val Ala Glu Tyr 490 Ser Glu Ala Lys Glu Val Arg Gly Val Lys Val Phe Arg Ser Ser Ala 505. Thr Val Tyr Phe Ala Asn Ala Glu Phe Tyr Ser Asp Ala Leu Lys Gln 520 525 Arg Cys Gly Val Asp Val Asp Phe Leu Ile Ser Gln Lys Lys Leu 535 Leu Lys Lys Gln Glu Gln Leu Lys Leu Lys Gln Leu Gln Lys Glu Glu 550 555 Lys Leu Arg Lys Gln Ala Ala Ser Pro Lys Gly Ala Ser Val Ser Ile 565 570 Asn Val Asn Thr Ser Leu Glu Asp Met Arg Ser Asn Asn Val Glu Asp 585 . . 580. Cys Lys Met Met Gln Val Ser Ser Gly Asp Lys Met Glu Asp Ala Thr 600 Ala Asn Gly Gln Glu Asp Ser Lys Ala Pro Asp Gly Ser Thr Leu Lys 615 620. Ala Leu Gly Leu Pro Gln Pro Asp Phe His Ser Leu Ile Leu Asp Leu 630 635 Gly Ala Leu Ser Phe Val Asp Thr Val Cys Leu Lys Ser Leu Lys Asn 650 Ile Phe His Asp Phe Arg Glu Ile Glu Val Glu Val Tyr Met Ala Ala . . 660 ' . . 665. Cys His Ser Pro Val Val Ser Gln Leu Glu Ala Gly His Phe Phe Asp 675 680. . 685 Ala Ser Ile Thr Lys Lys His Leu Phe Ala Ser Val His Asp Ala Val 695. . 700. Thr Phe Ala Leu Gln His Pro Arg Pro Val **710**

265

12/3